

CLAIMS

1. A process for producing a transgenic plant which accumulates a fructooligosaccharide, comprising: transforming a plant with a gene construct comprising a gene encoding β -fructofuranosidase capable of converting sucrose into a fructooligosaccharide.

2. The process according to claim 1, wherein the gene encoding β -fructofuranosidase is derived from a microorganism belonging to genus *Aspergillus*, genus *Penicillium*, or genus *Scopulariopsis*.

3. The process according to claim 2, wherein the gene encoding β -fructofuranosidase is derived from *Aspergillus niger*.

4. The process according to claim 1, wherein the gene encoding β -fructofuranosidase is selected from the group consisting of:

(a) a gene consisting of the nucleotide sequence of SEQ ID NO: 1,

(b) a gene comprising the nucleotide sequence of SEQ ID NO: 1,

(c) a gene comprising a nucleotide sequence in which one or plural nucleotides are deleted, substituted, or added in the nucleotide sequence of SEQ ID NO: 1, and encoding β -fructofuranosidase capable of converting sucrose into a fructooligosaccharide, and

(d) a gene comprising a nucleotide sequence having a 85% or more homology with that of SEQ ID NO: 1, and encoding β -fructofuranosidase capable of converting sucrose into a fructooligosaccharide.

5. The process according to any one of claims 1 to 4, wherein the gene construct comprises a gene which encodes β -fructofuranosidase and is operably linked to a constitutive promoter, an organ-specific promoter, or a developmental-specific promoter.

6. The process according to claim 5, wherein the promoter is selected from the group consisting of:

- (i) a CaMV35S promoter,
- (ii) a sweet potato sporamin A promoter, and
- (iii) a sweet potato sporamin B promoter.

7. The process according to any one of claims 1 to 6, wherein the transgenic plant is a dicotyledonous plant or a monocotyledonous plant.

8. The process according to claim 7, wherein the transgenic plant is a plant belonging to Solanaceae, Chenopodiaceae, or Gramineae (Poaceae).

9. The process according to claim 8, wherein the transgenic plant is *Nicotiana* sp., *Beta* sp. or *Saccharum* sp.

10. A transgenic plant produced by the process according to any one of claims 1 to 9, or a progeny plant thereof.

11. A seed of the transgenic plant or progeny thereof according to claim 10.

12. A process for manufacturing a fructooligosaccharide, comprising:

cultivating the transgenic plant or progeny thereof according to claim 10 or the seed according to claim 11, and collecting a fructooligosaccharide accumulated in the plant body.